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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,390	07/29/2003	Yong Hu	146712004400	3956

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EXAMINER
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GARBER, CHARLES D

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/628,390

Applicant(s)

HU ET AL.

Examiner

Charles D. Garber

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/29/2003
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a) because they fail to show item C-3 in figure 2 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 11 recites the limitation "measures a slope of an output of the detector versus a linear velocity of the disk or a fly height of the head" which is ambiguous and may be interpreted to mean either:

--measures a slope of an output of the detector versus a linear velocity of the disk or measures a fly height of the head-- or

--measures a slope of an output of the detector versus a linear velocity of the disk or measures a slope of an output of the detector versus a fly height of the head—

The ambiguity renders the claim indefinite. For purposes of further examination Examiner will assume the second interpretation which appears to be consistent with depending claims 3-6 and 14-16.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5, 7-16, 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (US Patent 6,408,677).

Regarding claims 1-3, 7, 11-14, 18, Suzuki (US Patent 6,408,677) discloses a system shown in figure 3 with magnetic disk 10, a head 20 with PZT detector 25 and controller 55 that is hardware. The system is used to determine a curve 92 with a slope relating head output voltage vs. fly height for a given composite roughness which may be comprised solely of microwaviness (see figure 13, column 19 lines 19-67, column 10 lines 42-47). The curve slope will correspond to microwaviness. Though Suzuki does not expressly teach the hardware uses software Examiner takes Official Notice that use of software with hardware is widely known and it would have been obvious to one having ordinary skill in the art at the time the invention was made to use software with the hardware of Suzuki as software allows the hardware to be adapted to new measurement conditions, parameters, analysis requirements and output form with far greater flexibility than hardware alone that is fashioned for such tasks.

As for claims 4 and 15, Examiner considers this will be an inherent result as the structures and operation are the same in both the reference and the instant invention and what the sensor is detecting is the normal physical result from a head gliding over a disk with irregularities.

As for claim 5, Examiner considers this is inherent. Any output in Suzuki would correlate with microwaviness of a disk were the microwaviness measured with an optical tomographer.

As for claim 8, the detector 25 will pick up resonance or frequencies caused by microwaviness (column 11 lines 10-22).

As for claims 9 and 19, figure 5 shows both microwaviness and asperities.

As for claim 16, Suzuki further discloses "The magnetic disk can also be tested for defects using non-contact methods such as a magneto-resistive (MR) head, a laser, or an optical tester." As discussed above with respect to claim 5, any output in Suzuki would inherently correlate with microwaviness of a disk were the microwaviness measured with an optical tomographer.

Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (US Patent 6,408,677) in view of Li et al. (US Patent 5,410,402).

Suzuki as applied above lacks the head calibrated against a standard head.

Li teaches "a calibration standard for the accurate, uniform calibration of flying height testers" and "calibration of flying height testers" may be "accomplished through the use of a standard head whose characteristics are known."

It would have been obvious to one having ordinary skill in the art at the time the invention was made to calibrate the head of a disk tester with a standard head so that it may be more accurate.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Franco et al. (US Patent 6,262,572) teaches mapping disk surface waviness (shown as item 222 in figure 15A) as a baseline modulation (BLM) value (shown as  $V_{BLM}$  in figure 15B) as a function of position (in circular coordinates) on the disk surface. The  $V_{BLM}$  appears to be a change in amplitude or average amplitude of a resonance signal superimposed on the regular data signal 232. The  $V_{BLM}$  does not provide a measurement of the slope of the detector signal versus disk velocity or head height but of position. The  $V_{BLM}$  measurement appears to be the result of low pass filtration which provides a result independent of speed even if the modulation apparent in data signal 232 varies as a function of the speed the data was laid down.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Garber whose telephone number is (571) 272-2194. The examiner can normally be reached on 6:30 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdg



CHARLES GARBER  
PRIMARY EXAMINER